U.S. Department of the Interior U.S. Geological Survey

METAL INDUSTRY INDICATORS

April 1997

Indicators of Domestic Primary Metals, Steel, Aluminum, and Copper Activity

Growth in Leading Index of Metal Prices Slows

The leading index of metal prices edged down to 96.5 in February, the latest month for which data are available, almost unchanged from the 96.6 in January. The 6-month smoothed growth rate, a compound annual rate that measures the near-term trend, also dipped slightly, down to 0.2%, compared to 0.4% for January. The latest reading from the growth rate indicates that most metal prices will experience little or no growth in the near future.

The metals price leading index gives signals of major changes in price growth an average of 8 months in advance. It is constructed with the 6-month smoothed growth rates of four different economic activities that are sensitive to the business cycle and that are measures of demand for metals. A growth rate below -1.0% usually means decreasing growth, while a growth rate above +1.0% implies increasing growth.

A large increase in building permits authorized for new housing kept the February leading index near its January level. Contributions from the other two available indicators, the inflation-adjusted values of new orders for U.S. nonferrous metals and U.S. M2 money supply, were negative in February.

Leading Indicators (6 months ago and latest month)		Outlook
Leading Index of Metal Prices		
Aug '96	96.4	The leading index indicates that most metal prices will
Feb '97	96.5	experience little or no growth in the near future.
Primary Metals Leading Index		
Sept '96	120.2	Moderate growth in overall primary metals activity should
Mar '97	125.1	occur in the near term.
Steel Leading Index		
Aug '96	102.5	Slow near-term growth is expected for the domestic steel
Feb '97	104.4	industry.
Aluminum Mill Products Leading Index		
Aug '96	139.6	The leading indexes continue to point to moderate growth
Feb '97	143.8	in the aluminum industries in the coming months.
Copper Leading Index		
Aug '96	117.9	The U.S. copper industry will likely grow at a modest
Feb '97	121.1	pace in the short term.

NOTE: Historical data back to 1948 for 12 of the indexes in Metal Industry Indicators (MII) are now on the World Wide Web. The URL for the MII is: http://minerals.er.usgs.gov/minerals/pubs/mii/

On the supply side, the deflated value of nonferrous metal products inventories held in the United States declined for the fifth straight month in February. February is the latest month for which this Census Bureau series is available. Lower inventories could be pointing to higher prices, but the amount of inventory decline was the lowest since last October. Metal price growth, as measured by the MII nonferrous metals price index, also slowed in March, after significant increases in January and February.

The latest leading indicators of economic growth for the United States and other industrialized countries, such as Germany, Japan, and France,[1] point to the possibility of higher growth in these countries later in the year. While better economic performance could boost metal prices, rising U.S. interest rates could dampen prospects for faster economic growth not only in the United States, but other countries as well. The combined picture emerging from industry and national indicators implies a falloff in price growth for most metals.

The contribution in percentage points of each index component to the leading index percent change for February is as follows: new orders for U.S. *(continued on page 2)*

[1]Published by the Center for International Business Cycle Research at Columbia University.

(continued from page 1) nonferrous metals, -0.3; index of permits for new housing, 0.3; and U.S. M2 money supply, -0.1. The fourth index indicator, inflation-adjusted debt of U.S. nonfinancial sectors, was not available for the February index calculation.

It is important to recognize that the business cycle and inventories are only two factors in price determination. Other factors that affect prices include changes in the production of metals, speculation, strategic stockpiling, and production costs.

Foreign Exchange Rates and Metal Prices

Each month, the Federal Reserve Board publishes a trade-weighted index showing changes in the average exchange value of the U.S. dollar against the currencies of the other G-10 countries.[2] The G-10 countries comprise most of the world's large industrialized nations. When the index is rising, the value of the dollar, on average, is increasing against the other G-10 currencies.

One can obtain changes in the average value of the other G-10 currencies against the U.S. dollar by dividing the dollar index into the number one. This reciprocal relationship can be used to create an index whose growth either anticipates or follows the growth of the MII nonferrous metals price index. (See the special chart).

There are several theories why foreign exchange rates rise and fall, but none of these theories has consistently predicted changes in foreign exchange rates. In the short run, interest rates and economic performance appear to be the best reasons why a country's foreign exchange rate increases or decreases. Moreover, exchange rates depend not only on current market conditions and policies, but also on expected market conditions and policies.

With the exception of the United States, Canada, and Sweden, most G-10 countries *(continued on page 12)*

[2] The G-10 countries are actually eleven. They are Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States. They are the wealthiest members of the International Monetary Fund who provide most of the money to be loaned to developing countries.

Table 1.
Leading Index of Metal Prices and Growth Rates of the Nonferrous Metals Price Index, Inventories of Nonferrous Metal Products, and Selected Metal Prices

		Six-Month Smoothed Growth Rates				
	Leading Index of Metal Prices (1967=100)	MII Nonferrous Metals Price Index	U.S. Nonferrous Metal Products Inventories (1982$)	Primary Aluminum	Primary Copper	Steel Scrap
1996						
February	97.2r	-16.4	7.9	-17.5	-20.4	6.6
March	97.4r	-11.4	5.6	-9.6	-18.8	-3.3
April	97.3r	-9.2	4.8	-12.5	-9.9	-4.8
May	96.3r	-12.8	3.8	-14.1	-16.6	1.1
June	96.3r	-29.3	6.1	-21.6	-45.4	-2.2
July	96.7r	-24.1	10.6	-16.6	-39.9	-7.6
August	96.4r	-20.9	10.7	-15.6	-33.3	-5.8
September	95.4r	-26.9	10.1	-23.5	-37.6	-1.3
October	95.1r	-21.1	8.2r	-16.6	-31.7	-13.3
November	95.7r	2.2	6.1	-2.8	11.8	-26.3
December	96.0r	-6.9	2.9r	-2.0	-11.2	-21.8
1997						
January	96.6	6.5	-1.3r	9.8	6.6	-6.6
February	96.5	11.0	-2.5	12.7	10.5	3.7
March	NA	10.4	NA	10.1	11.2	-3.3

r *- Revised*

Note: The components of the Leading Index of Metal Prices are the 6-month smoothed growth rates of the following: 1, the deflated value of new orders for nonferrous metals; 2, the deflated value of total debt of U.S. nonfinancial sectors; 3, the index of new private housing units authorized; and 4, the deflated value of U.S. M2 money supply. The Metal Industry Indicators (MII) Nonferrous Metals Price Index measures changes in end-of-the-month prices for primary aluminum, copper, lead, and zinc traded on the London Metal Exchange (LME). The steel scrap price used is the price of No. 1 heavy melting. Inventories consist of the deflated value of finished goods, work in progress, and raw materials for U.S.-produced nonferrous metals and nonferrous metal products. Six-month smoothed growth rates are based on the ratio of the current month's index or price to its average over the preceding 12 months, expressed at a compound annual rate.

Sources: U.S. Geological Survey (USGS); American Metal Market (AMM); the London Metal Exchange (LME); and the Bureau of the Census

Link To:

Chart 1.

Table 2.
The Primary Metals Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
April	120.1	3.5r	106.7	2.1
May	120.3r	3.2	107.0	2.5
June	120.6r	3.0r	107.2	2.5r
July	119.7	1.2	107.7	3.2
August	120.5r	2.1r	108.5	4.0
September	120.2	1.5	108.5	3.6
October	120.3	1.5	109.3	4.5r
November	120.6r	1.5r	108.7r	2.9r
December	122.0r	3.5r	109.3r	3.5r
1997				
January	122.0r	3.0r	109.3r	2.9
February	123.3r	4.4r	109.9	3.5
March	125.1	6.7	NA	NA

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 3.
The Contribution of Each Primary Metals Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**February**	**March**
1. Average weekly hours, primary metals (SIC 33)	0.3r	0.8
2. S&P stock price index, machinery, diversified	0.2r	0.2
3. Ratio of price to unit labor cost (SIC 33)	0.3	NA
4. JOC metals price index growth rate	0.1r	0.0
5. New orders, primary metals, (SIC 33) 1982$	-0.1	NA
6. Index of new private housing units authorized by permit	0.1	NA
7. Growth rate of U.S. M2 money supply, 1992$	-0.1	NA
8. Purchasing Managers' Index	0.1r	0.4
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.9r	1.4

Coincident Index	**January**	**February**
1. Industrial production index, primary metals (SIC 33)	-0.2r	0.4
2. Total employee hours, primary metals (SIC 33)	-0.1	0.2
3. Value of shipments, primary metals, (SIC 33) 1982$	0.2	0.0
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.0r	0.7

Sources: Leading: 1, Bureau of Labor Statistics; 2, Standard & Poor's; 3, Center for International Business Cycle Research, Bureau of Labor Statistics, and Federal Reserve Board; 4, Journal of Commerce; 5, Bureau of the Census and U.S. Geological Survey; 6, Bureau of the Census and U.S. Geological Survey; 7, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 8, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey. All series are seasonally adjusted, except 2, 3, and 4 of the leading index.

NA*: Not available* ***r*** *- Revised*

Note: A component's contribution, shown in Tables 3, 5, 7, and 9, measures its effect, in percentage points, on the percent change in the index. Each month, the sum of the contributions plus the trend adjustment equals (except for rounding differences) the index's percent change from the previous month.

Links To:

Chart 2.

Chart 3.

Table 4.
The Steel Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
March	103.0r	1.4r	97.5	0.4
April	103.6	2.4r	98.0	1.3
May	103.8r	2.3r	98.3	1.9
June	103.9	2.0	98.8	2.7
July	102.9	-0.2r	99.0	2.7
August	102.5	-1.1r	98.6	1.5
September	102.5	-1.1r	98.6	1.2
October	101.9r	-2.1r	99.2	2.2
November	102.7r	-0.6r	98.5r	0.6r
December	103.4r	0.6	98.9	1.2
1997				
January	103.8r	1.3r	99.3	1.8
February	104.4	2.4	99.5	1.7

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 5.
The Contribution of Each Steel Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**January**	**February**
1. Average weekly hours, blast furnaces and basic steel products (SIC 331)	0.1	-0.1
2. New orders, steel works, blast furnaces, and rolling and finishing mills, 1982$, (SIC 331)	0.0r	0.0
3. Shipments of household appliances, 1982$	-0.1r	0.3
4. S&P stock price index, steel companies	0.1	0.0
5. Industrial production index for automotive products	0.2r	0.0
6. Growth rate of the price of steel scrap (#1 heavy melting, $/ton)	0.2	0.2
7. Index of new private housing units authorized by permit	-0.1	0.1
8. Growth rate of U.S. M2 money supply, 1992$	0.1	-0.1
9. Purchasing Managers' Index	-0.2	0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.3r	0.5
Coincident Index		
1. Industrial production index, basic steel and mill products (SIC 331)	0.0	0.4
2. Value of shipments, steel works, blast furnaces, and rolling and finishing mills (SIC 331), 1982$	0.1r	-0.1
3. Total employee hours, blast furnaces and basic steel products (SIC 331)	0.2	-0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.4r	0.2

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey; 4, Standard & Poor's; 5, Federal Reserve Board; 6, Journal of Commerce and U.S. Geological Survey; 7, Bureau of the Census and U.S. Geological Survey; 8, Federal Reserve Board, Conference Board, and U.S. Geological Survey; and 9, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of the Census and U.S. Geological Survey; 3, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted, except 4 and 6 of the leading index.

NA*: Not available* ***r*** *- Revised*

Links To:

Chart 4.

Chart 5.

Table 6.
The Aluminum Mill Products Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
March	137.0r	2.0r	123.5	1.6
April	138.5	3.6r	122.6	0.3
May	139.4r	4.1r	123.6	1.9
June	139.7r	3.7	121.8	-0.8
July	139.2r	2.3r	123.3	1.7
August	139.6r	2.3	124.3	3.1
September	141.1r	4.1r	125.4	4.5
October	138.5r	0.2	123.8	1.7
November	140.1r	2.2r	124.5r	2.6r
December	140.7r	2.9	125.0r	3.2r
1997				
January	141.5r	3.6r	125.7r	3.7r
February	143.8	6.0	126.1	3.4

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 7.
The Contribution of Each Aluminum Mill Products Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**January**	**February**
1. Average weekly hours, aluminum sheet, plate, and foil (SIC 3353)	0.6r	0.4
2. Index of new private housing units authorized by permit	-0.1	0.2
3. Industrial production index for automotive products	0.2	0.1
4. Construction contracts, commercial and industrial (mil. sq. ft.)	-0.3	0.3
5. Net new orders for aluminum mill products (mil. lbs.)	0.1r	0.4
6. Growth rate of U.S. M2 money supply, 1992$	0.1	-0.1
7. Purchasing Managers' Index	-0.2	0.1
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.5r	1.5
Coincident Index		
1. Industrial production index, aluminum sheet, plate, and foil (SIC 3353)	-0.2r	0.0
2. Total employee hours, aluminum sheet, plate, and foil (SIC 3353)	0.4	0.2
3. Shipments of aluminum mill products (mil. lbs.)	0.3r	0.0
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.6r	0.3

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, Federal Reserve Board; 4, F.W. Dodge, Division of McGraw-Hill Information Systems Company; 5, The Aluminum Association, Inc. and U.S. Geological Survey; 6, Federal Reserve Board, Conference Board, and U.S. Geological Survey; 7, National Association of Purchasing Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; 3, Bureau of the Census and U.S. Geological Survey. All series are seasonally adjusted.

NA: Not Available *r - Revised*

Links To:

Chart 6.

Chart 7.

Table 8.
The Copper Industry Indexes and Growth Rates

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
1996				
March	118.5	3.0	111.9	0.1
April	119.3	4.0	112.6	1.2
May	119.2	3.2	112.6	1.0
June	118.1	1.0	112.6	0.9
July	118.0	0.6	113.0	1.5
August	117.9	0.3	112.3	0.0
September	118.0	0.4	114.0	2.8
October	118.4	0.9	115.2	4.4
November	120.4	3.7	113.4r	1.0r
December	119.8	2.3	114.3r	2.4r
1997				
January	119.7	2.0r	113.3r	0.5r
February	121.1	3.7	114.2	1.7

r *- Revised*

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

Table 9.
The Contribution of Each Copper Index Component to the Percent Change in the Index from the Previous Month

Leading Index	**January**	**February**
1. Average weekly overtime hours, rolling, drawing, and extruding of copper (SIC 3351)	-0.4	0.1
2. New orders, nonferrous and other primary metals, 1982$	0.4	-0.1
3. MII stock price index, copper companies	0.1	0.1
4. Ratio of shipments to inventories, electronic and other electrical equipment (SIC 36)	-0.4	0.8
5. Growth rate of the LME spot price of primary copper	0.4	0.1
6. Index of new private housing units authorized by permit	-0.1	0.2
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.0	1.2
Coincident Index		
1. Industrial production index, primary smelting and refining of copper (SIC 3331)	-0.1r	0.2
2. Total employee hours, rolling, drawing, and extruding of copper (SIC 3351)	-1.0r	0.5
3. Copper refiners' shipments (short tons)	0.2	0.1
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	-0.8r	0.9

Sources: Leading: 1, Bureau of Labor Statistics; 2, Bureau of the Census and U.S. Geological Survey; 3, U.S. Geological Survey; 4, Bureau of the Census and U.S. Geological Survey; 5, London Metal Exchange and U.S. Geological Survey; 6, Bureau of the Census and U.S. Geological Survey. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics; 3, American Bureau of Metal Statistics, Inc. and U.S. Geological Survey. All series are seasonally adjusted, except 3 and 5 of the leading index.

NA*: Not available* ***r*** *- Revised*

Links To:

Chart 8.

Chart 9.

Link To Special Chart

(continued from page 2) import large quantities of nonferrous metals. Moreover, LME prices for metals are dollars denominated. When the dollar rises against other G-10 currencies, metals become more expensive for the other G-10 countries, because they have to pay more in their currencies to buy U.S. dollars. If economic growth is weak in these countries, the quantity of metals imported by them may fall.

A strong dollar also hurts U.S. manufacturers. If a U.S. manufacturer attempts to sell durable equipment overseas, for example, a strong dollar erodes the competitiveness of the manufacturer against foreign rivals.

As the special chart shows, growth in the average value of G-10 currencies against the U.S. dollar has declined dramatically since last December. This decline may be reflecting the continued weakness in the G-10 economies, which, in turn, may explain why metal price growth is slowing.

Growth in Leading Indexes Is Strong But Other Factors May Limit Increases in Metals Activity

The growth rate of the primary metals leading index has moved up to its highest level in almost three years. Growth in the other metal industry leading indexes is also generally higher than during the last half of 1996. Normally, this would be a clear signal of strength in the domestic metals industry.

However, other factors, such as rising interest rates, the strength of the U.S. dollar relative to other major currencies, and high rates of capacity utilization in the U.S. metal industries suggest a more cautious forecast. If the U.S. dollar continues to remain strong, for example, U.S. imports of some metals may increase. This is especially likely, given the capacity limitations in the U.S. metal industries.

The primary metals leading index is the only metal industry leading index that is available for March. It advanced 1.5% to 125.1 from a revised 123.3 in February. Increases in the other leading indexes ranged from 1.6% for aluminum mill products and 1.2% for copper, to 0.6% for both steel and primary and secondary aluminum. (Tables and charts for the primary and secondary aluminum indexes are in a separate file.)

The average workweek in primary metals establishments contributed to much of the growth in the primary metals leading index in February and March. The average workweek also helped push the leading indexes for the aluminum mill products and primary and secondary aluminum industries higher in February.

Growth in the February leading indexes for steel, aluminum mill products, and copper also came from other indicators that measure shipments, new orders, and construction contracts. Increased shipments of household appliances was the largest factor in the rise of the steel leading index. New orders and commercial and industrial construction contracts boosted the aluminum mill products leading index. And the ratio of shipments to inventories for electronic and electrical equipment was responsible for two-thirds of the increase in the copper leading index.

Based on the performance of the metal industry leading indexes and in light of the limiting factors discussed earlier, the overall primary metals industry should continue to grow at a moderate pace in the near term. Slow near-term growth is likely for the steel industry, while the nonferrous metal industries should experience more moderate growth, overall, in the coming months.

The next Metal Industry Indicators summary is scheduled for release on MINES FaxBack at 10:00 a.m. EDT, Friday, May 16. Access MINES FaxBack from a touch-tone telephone attached to a fax machine by dialing 703-648-4999.

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